

REMARKS

This case has been carefully reviewed and analyzed in view of the Office Action dated Feb. 07, 2005. In the Office Action, the examiner rejected Claims 1-43 under 35 U.S.C.102 (b) as being anticipated by the Grassbaugh, et al. reference.

Responsive to the Office Action, it is noted that the most important characteristic of the invention is the assembly of the scroll compressor. The semi-hermetic scroll compressor is a new scroll compressor field so that we have to explain differences of the assembly of the semi-hermetic scroll compressor between the prior arts defined as hermetic scroll compressor.

In addition, claims 1 and 22 have disclosed that the semi-hermetic scroll compressor comprises a plurality of sub-casings with fixing design is initially configured inside at least one internal surface of the sub-casings.

Based on statements above, we compare the subject Patent Application with the cited references as follows:

The difference between the subject Patent Application and Fain reference and Grassbaugh, et al. reference in the Design of casing :

1.1 On structural design:

1.1.1: Design of casing

The subject Patent Application adopts a semi-hermetic design. The whole structure consists of two or more casting casings. Each casing has a positioning reference surface (for positioning a motor) for other elements that is formed by precision machining. Each reference surface is separated and located in the

casing independently. Finally the two casting casings are fastened together via screws and suitable anchoring mechanisms to form the sealing of the compressor. The compressor of the subject patent application may be assembled and disassembled repeatedly (for repairs and maintenance). Moreover, the precision can be controlled as desired without the concern of element deformation caused by soldering. In terms of design or machining precision, the semi-hermetic design of the subject Patent Application is able to accomplish more precise positioning than any of the two cited patents.

1-1-2. Design of elements:

During design of elements, the coupling portions are designed based on corresponding portions of the casing. As each casing has a positioning reference surface formed by precision machining required for each element, and the reference surfaces are separately and independently located on the casing, the complexity resulting from accumulating the tolerances of the elements can be reduced. Design and machining of the elements are simplified. In addition, the characteristics of casting formation of the casting casing can be further exploited. For instance some elements may be formed with the casing in an integrated manner, such as bearing housing and the like. Thus an improved structural rigidity may be achieved, and the number of elements can be reduced. The structure thus formed by adopting the semi-hermetic design has a higher reliability and lower fabrication and assembly costs.

1.2 On Assembly method:

On the design of the casting casing, most positioning surfaces are located on various portions of the casing and formed in the same fabrication process in a separated and independently manner. During assembly, the whole structure can

be divided into a plurality of sub-assemblies according to distribution on the casing. For instance, in an embodiment of the subject Patent Application, the power source of the Motor and Lower bearing, the Lower bearing housing and the Lower casing can be formed an independent sub-assembly. And the Main bearing housing and the Middle casing can be integrated and formed a secondary sub-assembly with the Main bearing. Other mechanisms may also be structured likewise. Finally, the sub-assemblies are coupled through screws. Hence the disadvantage of tolerance accumulation caused by stacking many elements can be prevented. The precision of the mechanism can be controlled and improved. As a result, the mechanical efficiency and reliability of the compressor improve, and vibrations and noises are reduced.

2. The cited references U.S. patent No. 5,380,170 to Fain, and U.S. patent No. 5,267,844 to Grassbaugh et al.

2.1 On structural design:

2.1.1 Design of casing:

Adopt a hermetic design. The outer casing is made of a steel plate and formed by stamping. Although it includes a plurality of different portions (such as Cap and Shell) of different functions, various portions of the casing are soldered to form the sealing of the compressor. Heat transfer occurs during high temperature soldering. This tends to cause deformation of the internal elements and undesirable alignment of the bearing. As a result, vibration and noises are generated. In serious situations, the elements interfere and interlock. Special care has to be taken on the design of the internal allowance and the soldering process. Moreover, forming by stamping has to take into account of mold

fabrication, mold precision and costs. It is applicable only to positioning mechanisms that require few and constant-shaped elements.

2.1.2 Design of elements:

Except a few elements (such as Lower or/and main bearing housing and Shell) that are directly related to the steel casing, most elements are coupled by assembly. The elements and the casing do not have a direct relationship. Hence precision of the individual elements is important during design and machining to control the accumulated tolerance after assembly.

2.2 On Assembly method:

The elements are assembled individually. Such an approach tends to create accumulated tolerance that is difficult to control. As a result, the complexity of design of individual elements, fabrication and assembly fixtures increases.

3. Based on the comparisons set forth above, the differences between the semi-hermetic scroll compressor of the subject Patent Application and the hermetic scroll compressor that adopts the conventional techniques can be understood easily. In addition, the subject Patent Application has more novel and progressive features as follow:

3-1. The semi-hermetic design and casting casing can simplify element design and combine the elements according to design alterations. The number of the elements may be reduced. The rigidity of the elements increases. The mechanical efficiency and reliability of the compressor are enhanced.

3-2. The design and assembly of the elements are simplified. The precision of the elements and assembly is enhanced. The production cost is lower.

3-3. The design logic of the sub-assembly is significantly different from the conventional hermetic design.


3-4. The semi-hermetic design can be assembled and disassembled repeatedly. Repairs and maintenance of the equipment and machinery are easier.

It is now believed that the subject Patent Application has been placed fully in condition for allowance, and such action is respectfully requested.

This Amendment has been prepared by Applicant and is being filed by the undersigned attorney on Applicant's behalf without substantial change.

Respectfully submitted,

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